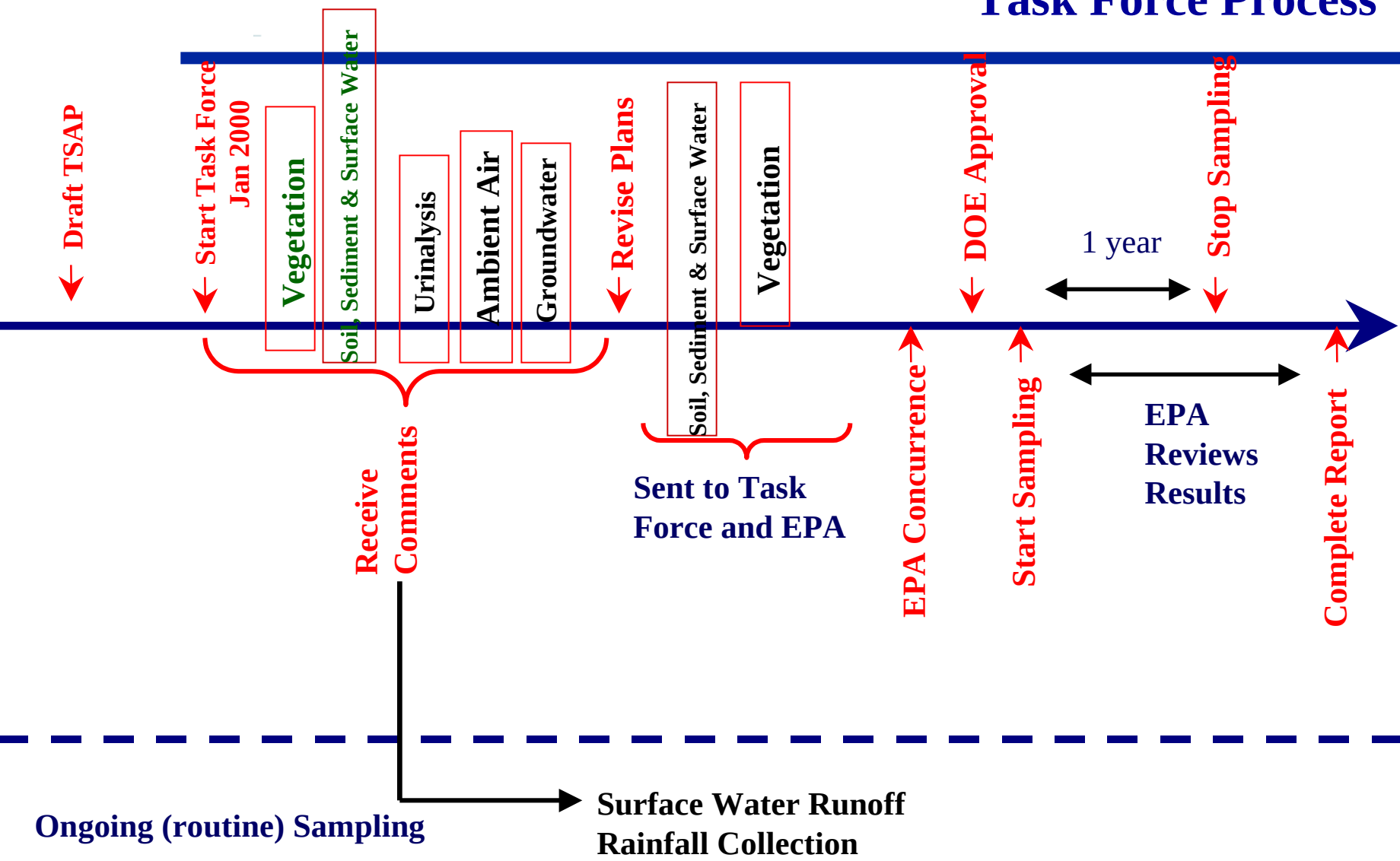
Task Force Sampling

Task Force Process



Structure of Presentation

- Three media to be discussed tonight:
  - Ambient Air
  - Groundwater
  - Urinalysis
- In each medium, three sections:
  - What was proposed in the Tritium Sampling and Analysis Plan.
  - What Berkeley Lab does in ongoing monitoring programs.
  - Task force and community comments, and the Lab's responses.

NTLF Stack Issue

- Public comment via the Task Force recommended removal of the stack.

- Recent emissions reductions that allow stack removal include:

  - Uranium bed tritium recovery process system
  - Process hardware, methodology, and operational changes
  - Recycling of air within enclosures
  - Ongoing process monitoring, peer and safety review.

- Berkeley Lab has nearly completed engineering studies regarding the feasibility of stack removal.

NTLF Stack Issue

- System Improvements

  - Replace nine air supply units with two
  - Upgrade chemical fume hood systems
  - Consolidate all exhaust into a single system and place a smaller stack on the roof of 75B.
  - Replace main exhaust blowers and remove large hillside stack

- Results

  - Reduced energy consumption: annual savings can power 8 Bay Area houses for a year
  - Reduced occupational doses because of improved fume hood capture efficiency
  - No increase in environmental emissions

Tritium Sampling & Analysis Plan (TSAP):

- Two additional locations (to the Lab's current ambient air monitoring stations) are proposed to meet EPA's request.
  - The first proposed site is located at the University of California's Botanical Gardens, to obtain additional resolution of tritium levels in the ambient air downwind of the stack in a primary wind direction.
  - The second proposed location is at EBMUD's Summit Reservoir, to provide samples representative of the 1- to 2-mile band and background conditions. Note: the Lab has since proposed to substitute Amito Reservoir for Summit Reservoir in response to an EPA comment that Summit, at 2.1 miles, is too far away.

Comment Area: Ambient Air

Ongoing Laboratory Program(s)

- Berkeley Lab currently samples levels of tritium in ambient air at seven monitoring sites, four on-site and three off-site. Equipment at these sites continuously samples outdoor air. The sampling media are replaced and analyzed monthly. Samples from 2 locations are split and sent to EPA for analysis by its laboratory.

- Berkeley Lab also continuously monitors stack effluent from the NTLF.

- Information on the results of environmental monitoring is reported annually in the Laboratory's Site Environmental Report and is available at the UC Berkeley main library (Doe Library) or via the website at http://www.lbl.gov/ehs/epg/html/env_protection.htm.

Task Force and Community Comments

Move the meteorological station further up the hill closer to LHS, and add two new air sampling stations. (6/1, p. 91, 13 ff.)

- A new meteorological and ambient air station was installed in January, 2000, between the NTLF stack and the Lawrence Hall of Science. The monitor is ideally located based on wind data, elevation with respect to stack height, and breathing zone at the fence line.

Task Force and Community Comments (continued)

2. Verify the appropriateness of the sampler on the wall at the LHS. (8/10, p. 98, 1)

    - The LHS monitor was placed at a height of 3 meters for security purposes (protecting it from vandalism). If the Task Force feels that it would be more responsive to community concerns, we will consider relocating it to a height of 1.5 meters.

Task Force and Community Comments (continued)

3. Expand ambient air monitoring for tritium to 16 wind directions (Franke/IFEU Report, B. 1, page 19).

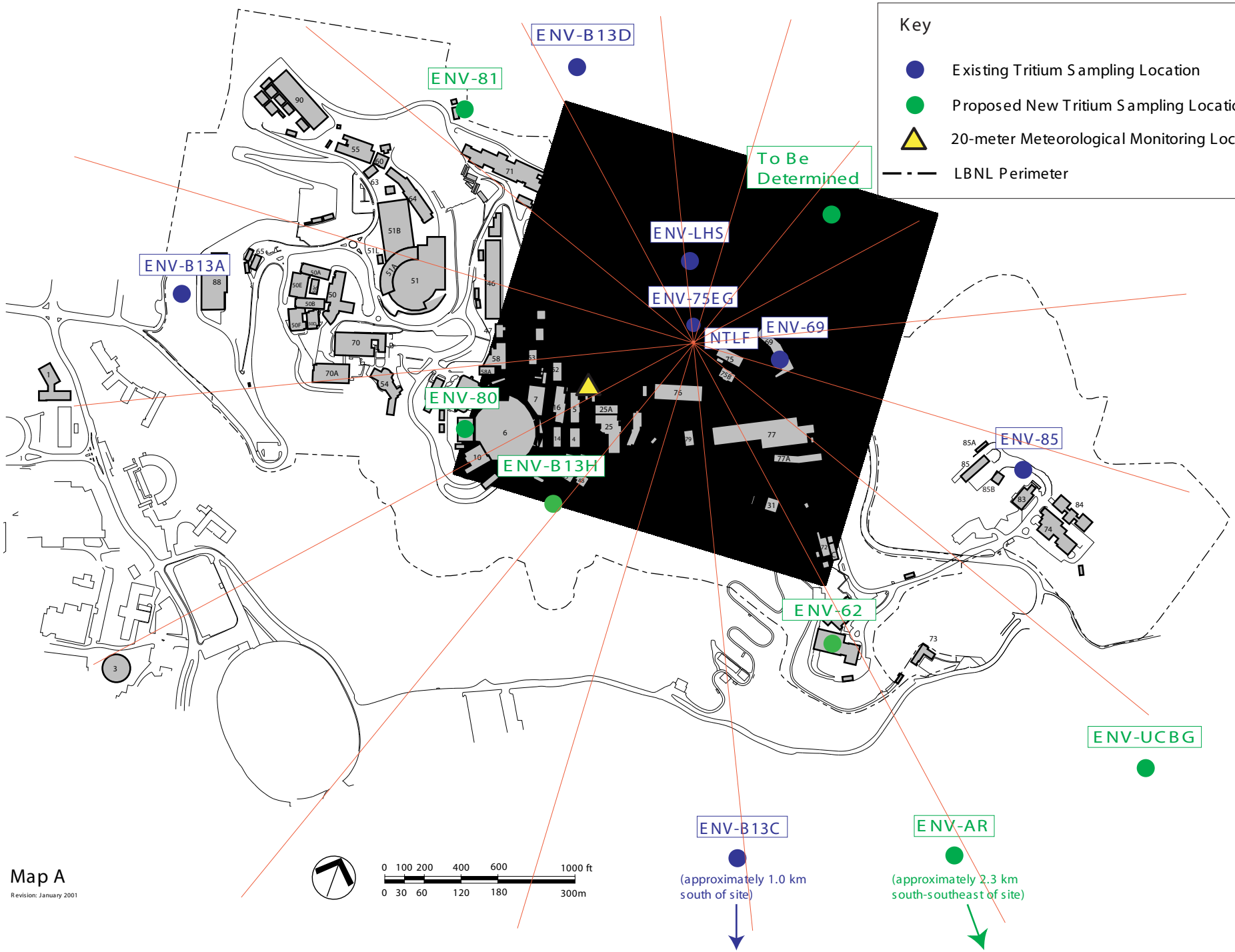
- Berkeley Lab located its ambient air monitoring stations based on two primary considerations: 1) where people are working or living who might be affected by emissions, and 2) what the wind patterns at LBNL are like.
- As a result of a ten-fold decrease in tritium emissions, the value of some ambient air stations was determined to be negligible. As a result, in 1995, four stations (13B, 13D, 3, and Mathematical Sciences Research Institute) were eliminated.
- The Lab will add 5 additional ambient air sites for TSAP sampling to the existing network. The total number of sites will be 14, including buildings 13H, 80, 81, UCB's Mathematical Sciences Research Institute, and building 62.

Task Force and Community Comments (continued)

4. It is recommended that DOE explain the rationale for the proposed sampling locations and why a sample in the 1-2 mile distance category is not needed. (U.S. EPA letter to U.S. DOE, 8-20-99, Sample Locations 1A).

    - We have identified a site about 1.5 miles south/southeast of the NTLF stack. This is at EBMUD's Amito Reservoir, in the direction of one of the prevailing winds at the NTLF. We are planning to install this monitor to implement sampling under the TSAP.

Berkeley Lab's Current and Proposed Tritium in Ambient Air Monitoring Network With Wind Rose from 20-meter Weather Tower Superimposed at Stack



Task Force and Community Comments (continued)

5. Analytical data for HTO (tritiated water vapor) in ambient air samples is verifiable and is subject to reasonable uncertainties (Franke/IFEU Report, A.4, page 17)

6. Exact amount of HT-- tritium gas (as opposed to HTO -- tritiated water vapor) released is of minor importance (U.S. EPA letter comments on IFEU report to City of Berkeley, 8-9-00).

7. For the small doses in question, as long as the total release is known from the silica gel data, the duration of these releases is insignificant; the effect is no greater than if the releases were continuous (U.S. EPA letter comments on IFEU report to City of Berkeley, 8-9-00).

Task Force and Community Comments (continued)

8. Modeling and monitoring at the LHS will not underestimate potential doses to the public, even when considering a person passing along the fenceline (U.S. EPA letter comments on IFEU report to City of Berkeley, 8-9-00).

9. Additional monitoring stations outside of the predominate wind directions, while they may serve other useful purposes, are not useful for the HRS evaluation, which compares the maximum ambient air concentrations detected to health-based benchmarks (U.S. EPA letter comments on IFEU report to City of Berkeley, 8-9-00).

Comment Area: Groundwater

Tritium Sampling & Analysis Plan (TSAP)

- No groundwater sampling was originally included in the plan, since EPA feels that it has sufficient information for the Hazard Ranking System (HRS) without additional groundwater sampling.

Ongoing Laboratory Program(s)

- An extensive groundwater monitoring program has been in place since 1991. The Laboratory's Environmental Restoration Program identifies soil and groundwater contamination that may have resulted from past releases of contaminants to the environment. Currently 56 wells are monitored for tritium. Activities are closely coordinated with regulatory agencies which review and comment on submitted work plans, quarterly progress reports, and other required documents.

Ongoing Laboratory Program(s) (continued)

- Information is reported quarterly in Environmental Restoration reports and annually in the Laboratory's Site Environmental Report (SER), which is available at the UC Berkeley Main Library (Doe Library). The SERs are also available via the LBNL web site at http://www.lbl.gov/ehs/epg/html/env_protection.htm.

Task Force and Community Comments

1. Perform groundwater monitoring as suggested by the Regional Water Quality Control Board (RWQCB). Use as a pathway for the EPA HRS. (6/1, p. 7, 2 and 11; 6/1, p. 13, 4; 6/1, p. 89, 12 ff.; 6/1, p. 91, 3; 6/1, p. 108, 13 ff.; 4/25, p. 56, 14; 4/25, p. 57, 10 ff.)

   The RWQCB is specifically concerned that tritium impacts to groundwater be included as part of EPA's Hazard Ranking System evaluation of risks to human health and the environment. (RWQCB letter to the Lab, 5-1-2000).

   Add groundwater sampling in coordination with the RWQCB. (Franke/IFEU Report, B1, page 19).

Comment Area: Groundwater

Task Force and Community Comments (continued)

- Groundwater was not included in the EPA's original request for further sampling for the HRS. No groundwater sampling was originally included in the plan, since EPA feels that it has sufficient information for the Hazard Ranking System (HRS) without additional groundwater sampling.

- There has been a systematic effort to investigate the groundwater here since 1991. The frequency and location of sampling is done in accordance with a schedule reviewed and approved by the RWQCB. Any groundwater contamination at the Lab has been identified and well characterized, and all results have been made available to regulatory agencies and the public.

Task Force and Community Comments (continued)

- The Board has clarified that it is not requiring Berkeley Lab to take more groundwater samples. (Environmental Restoration Quarterly Meeting with Regulators, 10/18/00).

Task Force and Community Comments (continued)

2. Groundwater is not a significant pathway because groundwater within 4 miles of the site is not currently being used for drinking water, and no drinking water wells within 4 miles of the site have been closed due to site-related contamination. (U.S. EPA letter to City of Berkeley, 8-9-00).

Comment Area: Urinalysis

Tritium Sampling & Analysis Plan (TSAP)

None included or required by EPA for the Hazard Ranking System (HRS).

Ongoing Laboratory Program(s)

Weekly urine samples are taken from National Tritium Labeling Facility (NTLF) staff; guest users and maintenance staff are periodically sampled as appropriate, under the provisions of 10 CFR 835, Occupational Radiation Protection.

Task Force and Community Comments

1. The Lab should perform bioassays (urinalysis) of individuals both on-site and at LHS. (4/25, p. 4, 22-24; 6/1, p. 87, 15 ff.; 4/25, p. 87, 14; 4/25, p. 90, 15)

- Urinalysis is performed weekly for NTLF radiation workers.
- The results from our environmental surveillance monitoring and resultant dose calculations for non-radiation workers are far below levels at which DOE requires monitoring of radiation dose.
- Berkeley Lab has initiated a Human Use application that must be approved by the joint UC-LBNL Institutional Review Board.
  - It is necessary to obtain informed consent from volunteers participating in any urinalysis program in order to use the data for research purposes, including comparison with environmental monitoring data.